

Algebraic K-theory of Toric Hypersurfaces

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Abstract

We describe how to use toric data to construct relative higher Chow cycles in $CH^n(X, n)$ ($n = 2, 3, 4$) for families of Calabi-Yau $(n - 1)$ -folds; and how to derive the inhomogeneous Picard-Fuchs equations satisfied by the regulator “periods” of such elements, which may be regarded as generalized normal functions. This setting leads to motivic proofs of acceleration formulas for arithmetic constants and irrationality of $\zeta(2)$ and $\zeta(3)$, as well as relations to the Yukawa coupling, Meijer G-functions and local mirror symmetry.